

This report concerns the quality of the drinking water Seattle Public Utilities provides to 1.3 million people in the Seattle area.

Drinking Water Quality Annual Report



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How you can get more information
Seattle Public Utilities
Customer Service Center206-684-3000
(To ask billing questions, or to report leaks or dirty water, etc.)
Water quality web site:.....www.seattle.gov/util/services/WaterQuality
Water quality e-mail:.....drinkingwater.quality@seattle.gov
Water quality phone:.....206-615-0827
Washington State Department of Health
Web site:www.doh.wa.gov/ehp/dw/
US Environmental Protection Agency
Web site:www.epa.gov/safewater/
Safe Drinking Water Act Hotline:1-800-426-4791
Safe Drinking Water Act e-mail:hotline-sdwa@epamail.epa.gov

How you can be involved in decisions
Seattle Public Utilities and the City of Seattle seek consumer opinions in many ways. You can participate through public hearings associated with environmental permitting and review of new facilities. There are regular utility briefings at City Council meetings and other formal or informal communications with utility management and elected officials. Please check the daily or community newspapers, or our web site, for listings.

Where our Drinking water originates

The Cedar River and the South Fork Tolt River supply almost all of Seattle's drinking water. These rivers begin in the Cascade Mountains and have very large watersheds (the areas that drain to the two rivers). When necessary to meet demands, Seattle Public Utilities (SPU) can supplement these supplies with water from the Highline Wellfield, located near Sea-Tac Airport. One well was used for 20 days in 2002.

How the water is treated

Currently, there are four steps in the treatment of the Cedar supply: screening, fluoridation, corrosion control, and disinfection with chlorine. Treatment for the Tolt supply includes screening, ozonation, coagulation and flocculation, filtration, chlorination, fluoridation, and corrosion control.

By mid 2004, a new treatment facility will be in operation for the Cedar supply. This new facility will include two new treatment processes, ozone and ultraviolet light (UV) disinfection, along with the existing treatment processes, corrosion control and chlorination. Fluoridation will continue at its current location, the Landsburg Treatment Plant.

The Cedar Treatment Facility is being developed in part to comply with an Agreed Order between the City of Seattle and the Washington State Department of Health. The Agreed Order was executed after one of the eleven criteria to remain unfiltered was exceeded in 1992. (It was exceeded again in 2002.) There was no public health risk associated with this exceedance, as treatment and monitoring occurred as required. The new treatment facility will improve public health protection by disinfecting *Cryptosporidium* and it will improve the musty/earthy taste and odor that occurs in this supply.



Aerial of Cedar Construction site.

How we protect the source

Protection of the two watersheds is very important to SPU's water quality program. Since both watersheds are publicly owned, we can enforce a comprehensive watershed protection program. This program prohibits agricultural, industrial and recreational activities in the watersheds, and no one is allowed to live there.

The Washington State Department of Health has surveyed our watersheds and determined that Seattle's sources have a low vulnerability to contamination. This means there is little opportunity for contaminants to enter the water.

Even so, there is always some potential for natural sources of contamination. In Seattle's surface water supplies, the potential sources of contamination include:

- microbial contaminants, such as viruses, bacteria, and protozoa from wildlife;
- inorganic contaminants, such as salts and metals, which are naturally occurring, and;
- organic contaminants, which result from chlorine combining with the naturally occurring organic matter.

What's in our Drinking water

The results of monitoring in 2002 are shown in the table below. These results are for parameters regulated by the federal and state agencies. For other water quality information, please check our web site (listed on the back) or call **206-615-0827**. We can also send you a list of the 177 compounds for which we tested but did not find in our surface water supplies, or water quality information for the Highline Wells.

Water quality monitoring data can be difficult to interpret. To make all the information fit in one table, we used many acronyms that are defined below the table. The first two columns list the compounds we detected and the units of measurement. The light green columns identify the regulatory limits we must stay below. The blue columns show the levels found in the Cedar and Tolt supplies. The last column identifies where these compounds may come from or how they are formed.

In Seattle, if you live south of Green Lake, your water probably comes from the Cedar. Areas north of Green Lake usually receive Tolt water. Each source can provide water to other areas in Seattle if needed.

		EPA's Allowable Limits		Levels in Cedar Water		Levels in Tolt Water		
Detected Compounds	Units	MCLG	MCL	Average	Range	Average	Range	Typical Sources
Turbidity	NTU	NA	TT	0.7	0.2 to 4.0	0.07	0.05 to 0.2	Soil runoff
Total Organic Carbon	ppm	NA	TT	0.86	0.68 to 1.1	1.3	1.2 to 1.5	Naturally present in the environment
Fluoride	ppm	4	4	1.0	0.9 to 1.1	1.0	0.1 to 1.2	Water additive, which promotes strong teeth
Total Trihalomethanes	ppb	NA	80	27	15 to 45	28	11 to 45	By-products of drinking water chlorination
Haloacetic Acids(5)	ppb	NA	60	23	15 to 37	25	13 to 41	
Haloacetonitriles*	ppb	No EPA limit set		1	ND to 2	2	ND to 3	
Haloketones*	ppb	No EPA limit set		1	ND to 3	5	2 to 6	
Total Organic Halides*	ppb	No EPA limit set		96	65 to 142	264	165 to 321	
Chloral Hydrate*	ppb	No EPA limit set		8	2 to 24	14	4 to 31	
Chloropicrin*	ppb	No EPA limit set		0.2	ND to 0.6	0.2	ND to 0.7	
Total Coliform	% positive samples	0	5%	Highest month = 2.6% Annual Average = 1.0%				Naturally present in the environment
Chlorine	ppm	MRDLG =4 MRDL = 4		Highest monthly average = 0.9 Range = 0 to 1.7				Water additive used to control microbes

* Monitoring results from July 1997 to December 1998.

Definitions

MCLG: *Maximum Contaminant Level Goal* - The level of a contaminant in drinking water below which there is no known or expected risk to health. MCLGs allow for a margin of safety.

MCL: *Maximum Contaminant Level* - The highest level of a contaminant that is allowed in drinking water. MCLs are set as close to the MCLGs as feasible using the best available treatment technology.

MRDL: *Maximum Residual Disinfectant Level* - The highest level of a disinfectant allowed in drinking water. There is convincing evidence that addition of a disinfectant is necessary for control of microbial contaminants.

MRDLG: *Maximum Residual Disinfectant Level Goal* - The level of a drinking water disinfectant below which there is no known or expected risk to health. MRDLGs do not reflect the benefits of the use of disinfectants to control microbial contaminants.

TT: *Treatment Technique* - A required process intended to reduce the level of a contaminant in drinking water.

NTU: *Nephelometric Turbidity Unit* - Turbidity is a measure of how clear the water looks. The turbidity MCL that applied to the Cedar supply in 2002 is 5 NTU, and for the Tolt it was 0.3 NTU. 100% of the samples from the Tolt in 2002 were below 0.3 NTU.

NA: *Not Applicable*

ND: *Not Detected*

pCi/L: *picocuries per liter*

ppm: *1 part per million = 1 mg/L*

ppb: *1 part per billion = 1 µg/L*

1 ppm: *1000 ppb*

Lead and copper in drinking water

The pipes in your home or business can have an impact on the quality of water coming from the tap. Of particular concern is copper pipe with lead solder installed in Seattle prior to 1980 or homes that do not meet the plumbing code. If you have such a home, you should consider running the water from the pipes before using it for drinking or cooking.

There are health impacts from lead in the water. Infants and children who drink water containing lead in excess of the action level could experience delays in their physical or mental development. Children could show slight deficits in attention span and learning abilities. Adults who drink water with high lead levels over many years could develop kidney problems or high blood pressure. If you would like more information about lead, please call **206-684-7834**.

Lead and copper regional monitoring program results

Parameter and Units	MCLG	Action Level	Results of 1997 Sampling*	Homes Exceeding Action Level	Source
Lead, ppb	0	15	19.3	53 of 390	Corrosion of household plumbing systems
Copper, ppm	1.3	1.3	0.6	0 of 390	
* 90th Percentile: i.e. 90 percent of the samples were less than the values shown.					

tion of a contaminant which, if exceeded, triggers treatment or other requirements which a water system must follow. Seattle's recently completed treatment and reservoir covering improvements (Tolt Treatment Facility and covering Bitter Lake and Lake Forest Reservoirs) should help further reduce the corrosiveness of the water to your plumbing. We expect to meet the action level when we complete monitoring at customers homes in 2004.

Radon in drinking water

Radon has not been detected in sampling conducted for the Cedar and Tolt supplies. However, radon was detected when one of the Highline Wells was operated in December 2002. The maximum concentration found was 560 pCi/L in source water. Because the well water is blended with water from the Cedar supply, the radon levels detected in the distribution system were much lower (between 60 and 90 pCi/L), below EPA's proposed MCL for radon (300 pCi/L). Well usage represented 0.1% of Seattle's supply in 2002.

Cryptosporidium

Cryptosporidium is a disease-causing organism that is commonly found in the natural environment. In 2002, *Cryptosporidium* was detected in 12 of the 24 samples collected from the Cedar supply, with a maximum concentration of 16 organisms per 100 liters. The number of organisms found are relatively low compared to typical rivers and streams throughout the country. Available methods used to detect *Cryptosporidium* are not very reliable and cannot determine if the organisms are dead or alive. Our current treatment for the Cedar supply is ineffective against *Cryptosporidium*; however, there have been no disease outbreaks associated with Seattle's drinking water. The Cedar's future treatment and the current Tolt treatment processes are very effective against *Cryptosporidium*.

Some people may be more vulnerable to contaminants in drinking water than the general population. Immuno-compromised persons, such as people with cancer undergoing chemotherapy, people who have undergone organ transplants, people with HIV/AIDS or other immune system disorders, some elderly, and infants can be particularly at risk from infections. These people should seek advice about drinking water from their health care providers. Environmental Protection Agency/Centers for Disease Control guidelines on appropriate means to lessen the risk of infection by *Cryptosporidium* and other microbial contaminants are available from the Safe Drinking Water Hotline **(1-800-426-4791)**.

If you would like more information about *Cryptosporidium*, a fact sheet is available from our web site at **www.seattle.gov/util/services/waterquality/crypto.htm** or by calling the water quality information line at **206-615-0827**.

Shown here are the 1997 results of regional sampling at 390 copper plumbed homes. Although copper was not a problem, 14 percent of the homes had lead levels above the action level. The action level is the concentra-

Information from the EPA

To ensure that tap water is safe to drink, the EPA adopts regulations setting the water quality standards for public water systems. The federal Food and Drug Administration regulates contaminants in bottled water and is responsible for providing the same level of public health protection.

Drinking water, including bottled water, may reasonably be expected to contain at least small amounts of some contaminants. The presence of contaminants does not necessarily indicate that water poses a health risk. More information about contaminants and potential health effects can be obtained by calling the EPA Safe Drinking Water Hotline **(1-800-426-4791)**.